THE HEALTH EDUCATION JOURNAL

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VOLUME XIII SEPTEMBER 1958 NUMBER 3

The Central Council for Health Education

THE HEALTH EDUCATION JOURNAL

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Published by

THE CENTRAL COUNCIL FOR HEALTH EDUCATION

TAVISTOCK HOUSE, TAVISTOCK SQUARE,

LONDON, W.C.1.

Founded 1927 *Incorporated* 1936

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From 1955 onwards, the HEALTH EDUCATION JOURNAL and the HEALTH INFORMATION DIGEST are being published at two-monthly intervals. During the year two issues of the Health Information Digest will appear, in January and July, and four issues of the Health Education Journal, in March, May, September and November. The subscription for the six issues is 15s. a year, post free.

Editorial

THE GAP

CECILY WILLIAMS in her provocative article* on the maternity and child welfare centre states that these centres were introduced to fill a gap. This is perhaps the most controversial point she raises. For her, the absence of infant welfare work was a gap which physicians had inadvertently overlooked. For us, the infant welfare movement was the expression of a new attitude to medicine as a whole, whose full development is still to be realised. The idea of personal preventive medical services, such as maternity and child welfare, is still so foreign to the vast majority of physicians that even to this day and in this country many are barely aware of their existence and function. This is not surprising when one reads the recent number of *British Medical Journal* which devotes itself to medical education. The simple fact is that the philosophy underlying the curriculum has not developed beyond a narrow craft concept of medicine.

For the majority of physicians who do not escape the blinkers of their hospital training, medicine is still " make do and mend " and their interests remain centred on the multiplication of the intriguing but narrow technicalities of diagnostics and therapeutics. Few see themselves or their patients in a social setting, and the notion of prevention or health promotion is frankly boring or irrelevant.

No one would question the pressing need for developing curative services at home, and especially in those countries which have not yet got them. One does, however, question very seriously the wisdom of setting up in developing countries a type of organisation in which the mistake of centring medical policy on disease is repeated. If the influential people, the organisers and the specialists of the new medical services are doctors trained only along the narrowing tracks of a British medical school, this pitfall is unavoidable and Dr. Williams' gap will remain to be filled, as it was in this country, by people outside the medical profession.

For this reason we are unhappy about the assumption that health education and preventive medicine can only be practised among the sick because only they will listen. They are clearly the only people who *can* listen to physicians, because they are the only people the physician sees or is interested in.

*See page 167

This question is becoming of the utmost seriousness when so much and such drastic development is under way.

It is customary to-day among progressive people to think in terms of an integrated service in which public health hospitals and general practice are under one administration. Ideally we would heartily support such a blueprint. But the practical question that immediately arises is who is the leader of the band? And here one must recognise that the practitioners of curative and of preventive medicine are quite different sorts of people with completely different outlooks.

The essential gap which still remains is in the training of doctors. Whatever one may think of the rest of the curriculum, few will deny that the idea of preventive medicine takes an insignificant part and health promotion is not even considered.

Fill this gap and the problem of how much prevention and how much cure would disappear.

In this connexion perhaps the most interesting example of the way out of the dilemma is the Pholela Health Centre in South Africa. This centre, which has now been running for 15 years, has demonstrated quite clearly that even under difficult and primitive conditions an integrated health service can work and appears to be a great deal more effective than the divided variety. To quote the Progress Report of Drs. Kark and Cassel* :

"The essential features which have developed include care of the sick and prevention of illness by the doctor and nurse associated with a programme of health education carried out by specially trained 'health assistants' acting under the direction of the doctor." It would appear from the report that the authors consider that these three branches of their service were at least equally important in achieving their results, and one is tempted from their findings to infer that the health education programme was perhaps the item they considered responsible for the long-term progress.

* *South African Medical Journal*, vol. 26, Nos. 6 and 7. Feb. 9th and 16th, 1952.

THE MATERNITY AND CHILD WELFARE CENTRE

Its Future and its Educational Opportunities

By CECILY D. WILLIAMS, D.M., F.R.C.P., D.T.M. & H.

In 1952 Dr. Leslie Banks (*B.M.J.*, **2**, 1007) suggested that the infant welfare centres had served their purpose and might now fade away. In 1953 Professor McKeown and his colleagues (*Lancet*, **1**, 88) said their work should be done by a new class of general practitioner–paediatrician with a health nurse to give the advice. The memorandum on Health Visitors (*B.M.J.* Supp., 1954, May 22, 266) and various other articles and correspondence in the last three or four years show what deep, diverse and often acrimonious thought has been given to the subject of welfare centres, their conduct and their personnel.

If we are going to consider the alternatives suggested by the violently dissenting pundits, we must in the first place remember that the maternal and infant welfare centre is meant primarily to render a service, and secondly, we must consider its historical and, still more important, its geographical setting.

The Centre as a Service

In England, as in most other European countries, the infant welfare centres were introduced to " fill a gap ". They were started mainly by voluntary workers who recognised that the gap existed. Many doctors did not recognise, and some never have recognised, the existence or extent of such gaps.

In 1900 the need was to teach patients how to avoid the common, minor, preventable complaints such as dyspepsia, diarrhœa and rickets. Medical treatment for major complaints was available either from general practitioners or from hospitals. There was no real shortage of treatment facilities, but parents had to be taught how these facilities could be used, and how to prevent disorders that were essentially preventable.

To-day the need to avoid these diseases exists just as much. But most of the measures that are necessary are now taken, and they are taken for granted. A great deal of what was then health education has passed into the national way of life. Of course, we still

have problem families that need consistent supervision, support and correction, but they are comparatively rare. To-day what the average young mother needs is reassurance, encouragement, and explanation. She is often in a state of confusion produced by numerous advisers, screaming advertisements, and her own emotional problems. Her education may have prepared her for her functions as a stenographer, a hockey player or a machine operative, but it has done remarkably little to prepare her for the functions of wife and mother. The number and range of medical and socio-medical problems which are discussed in women's journals, with their eight million circulations, are some indication of present-day anxieties and pre-occupations. In fact, the present-day " gap " is often more in the mental and social than in the purely somatic spheres. The problems are very often problems of behaviour and of adaptation rather than of infections and food deficiencies.

It is universally recognised that treatment and prevention of disease does not consist only of medication and innoculations. Large numbers of disorders are psychogenic, or partially psychogenic. The " National Health " patient who sees a busy general practititioner or a hospital consultant for a few minutes is unlikely to have adequate treatment. The patient with money who can pay for a leisurely visit from a private practitioner or an hour's consultation in Harley Street is in a better position to receive that mental support and consolation which is now recognised as essential to physical as well as mental well-being.

As long as an impecunious National Health Service cannot supply similar facilities for the commonality, the " infant welfare " can and should provide a humble but exceedingly useful safety valve for the relief of the disturbed, the anxious and the enquiring. But at the same time the staff must be prepared to identify and to ensure treatment for physical disorders—and in their earliest stages. This is a far more exacting test of diagnostic acumen than is required in hospitals where patients so often arrive after periods of observation and surmise from the general practitioner.

Sir James Spence urged that the health visitor should " work with her hands as well as with her heart and head ". There is divergence of opinion on this point, but I personally would agree that the best and most efficient work is where the functions of district nurse and health visitor are combined. It is *while giving treatment* that some of the most effective prevention can be ensured.

Whether doctors or health nurses should interview patients at welfare centres depends entirely on (*a*) what is best for the patients and (*b*) what personnel is available. Many patients will benefit from a good chat with a sensible health visitor. But the health visitor must be sufficiently astute to recognise problems that are

beyond her scope, and refer them to the welfare doctor or the general practitioner. By close collaboration between the various sections of the service, the maximum results may be obtained at reasonable outlay.

Training of Personnel

To obtain these results the staff must receive adequate training. It must be questioned whether the purely institutional training which is now prevalent both for doctors and nurses can be justified on any rational grounds. It seems probable that every kind of doctor and nurse, whether an institutional worker or not, would benefit by a part at least of the basic training being spent " in the field ". Those who study birds cannot expect to know much about them if they confine their observations to birds in cages. The same applies to human beings and hospitals. It would seem that present trends are towards making medical and nursing education more and more burdened with laboratory and technical detail. The " Widdicombe File " has referred to the Goodenough report as " That blast of hot air from the laboratories ". It is no wonder that many people feel that hospital practice is often somewhat remote from the lives of the people.

It is true that most of the doctors and nurses at welfare centres have received post-graduate training in public health, child health or health visiting. But all these post-graduate courses make the practice of medicine expensive. The lack of them tends to make and maintain the lamentable gulf that exists between the welfare centres and the hospitals. This gulf is further emphasised by the division of control. As long as the welfare centres are directed by local authorities and the hospitals by regional boards, there is little hope of rational planning.

There is no logical reason why child care should be sharply divided between curative work in hospitals and preventive work in welfare centres. No other branch of medicine is subjected to this form of dichotomy. The obstetric and gynaecological department works in close co-operation with antenatal clinics and everyone recognises that the closer the co-operation the more efficient the work. Child health work should be regarded as a whole. Paediatrics and maternal and child health must be considered as a whole, and the organisation of child health services must be unified. There should be no divergence of interest or of training between the paediatrician and the child health specialist. Paediatricians on the staff of a hospital should have continuing experience and responsibility in welfare centres.

Research

The infant welfare centres have proved to be an admirable focus for follow-up and for medical and social research. If, as

Professor Leslie Banks suggests, they were to fade away, it is difficult to imagine how this type of research could be continued. In these days when so much time and energy and money is spent on laboratory research it is supremely important for the epidemiological and social aspect of medicine to be studied, and the facilities for follow-up to be strenuously maintained.

From a historical and geographical as well as from a purely practical point of view it would seem that there is still room for maternity and infant welfare centres in England as long as they provide constructive answers to the needs that exist. It is their educational function which is most important. They must work in close touch with patient, general practitioner and hospital. Where they fail to do this, and function merely as distributing centres for dried milk, orange juice and innoculations, they should be condemned.

Welfare Centres in Developing Countries

May we turn now to a subject on which I am better informed and most deeply interested—the welfare centres in the " underdeveloped " or " developing " countries?

It is essential to bear in mind that in these countries there are two very important conditions that are almost universal. If the average span of life is only about thirty years, the group called " mothers and children " is not only very large, it forms the majority of the population, and yet it is invariably the most neglected and the most inarticulate group. In England some 15 per cent of the population is under the age of ten years, and in Malaya, Ceylon and Trinidad this age group is about 27 per cent. It is probably higher still in those countries as yet without statistics.

The other important fact to bear in mind is that the two great subjects of interest are food and health. As Professor Raymond Firth has said : " No doctor or nurse starts working in a vacuum". If a worker can prove he or she has anything to contribute to health or nutrition, the interest and the welcome is assured. The importance of health work, especially of maternal and child health work in community development, has not yet been sufficiently recognised by the social workers or by administrative authorities. In countries where population problems are becoming acute, it is the maternal and child health services above all that can, by focusing attention on the child, contribute to the solution of these problems.

It is quite obvious that in many regions there is no question of " filling a gap ". The presence of a " gap " implies that something exists round the circumference. But in some areas there are no, or practically no, child health services at all.

Before transplanting a " gap-filling " service into an entirely different milieu, it is necessary to determine the depth, length and breadth of that gap. No filling substance can be of any service

without its supporting structures. Remarkable disservice has been done to the cause of maternal and child health by those who have attempted to build up " infant welfare " which is " preventive and not curative " in a country where nearly half the children born alive die before maturity, and where there are few facilities for the treatment of the sick child. If maternity and infant welfare work is to achieve results, it must be built up, not according to some conventional foreign pattern, but according to the needs of that particular area.

It is therefore necessary to make some sort of rapid appraisal of the existing state of maternal and child health, of the facilities for dealing with these problems and of the available personnel. It is only after such an appraisal that intelligent plans can be propounded.

Without this sort of appraisal there is bound to be waste of resources and misguided effort. One hears very little about the failures in medical planning. We as doctors may learn something in clinical medicine by our own clinical disasters, but few people have the opportunity of examining and assessing methods of organisation and administration in maternal and child health programmes. Whatever is adverse or critical in such reports is apt to be softened or expurgated. There is remarkably little opportunity for accurate observation, comparison or frank discussion. In this the laboratory workers have a great advantage over the administrators.

The first thing we must examine is the standard of health among mothers and children. Vital statistics, where they exist, are of great help. But in the countries where the maternal and child health programmes are most backward, vital statistics are either inaccurate or non-existent. Spot surveys, unless conducted with great care, are prone to identify a large number of chronic diseases in adults, and to ignore the very much larger numbers of acute diseases which are rapidly fatal to children. There is no time here to go into details of how surveys can be made. But in many of the under-developed countries it will be found that the infant mortality is in the neighbourhood of 200, while the toddler mortality, compared with that in advanced countries, is even higher. In examining the standard of health we must find out to what the ill health is due. If malnutrition is widespread we must decide whether it is due to shortage of food, to misuse of food, or to some forms of wasting disease.

In the second place, the medical treatment must be examined. Is in-patient and out-patient treatment available for children and their mothers? Do the parents in fact make use of hospitals, dispensaries and clinics? If not, why not?

Thirdly, there is the question of personnel. Do the doctors, nurses, dispensers and midwives appear to be reasonably well

trained and interested in the local maternal and child health problems? Do they understand and appreciate the importance of paediatrics, both curative and preventive?

These are the three most important subjects for investigation. Without some sort of answers, we are not even "filling a gap"—we are building ivory towers.

There are many countries in the world where an attempt to transplant child health work out of its historical and geographical context has led to disappointment and failure. I will quote one example. In Java, the Rockefeller Foundation built up a rural demonstration scheme at Poerwakerto which aimed at being "preventive but not curative". A great deal of money was spent, but the results were meagre and superficial. In 1949 the Government of Indonesia frankly commented: "The community in the villages could not appreciate mere propaganda, which could not bring direct and real results for them. Propaganda should be attended with curative care". The apparent failure of this approach in no way detracts from the value of well planned and organised health education, but emphasises the importance of a balanced programme. The experiment in question failed to make the best use of staff and equipment where these were in short supply and where health needs were very great.

To ask for bread and be given a stone is just about as acceptable as to have children dying of sickness and to be offered good advice.

If there is a large infant and child mortality there are a great many sick children needing treatment. Until we have demonstrated our capacity to cure, no earthly population is going to believe in our ability to prevent disease.

Two facts stand out at once. First, in treating a minor disease one is often preventing a major catastrophe and, second, it is when the parents see the results of treatment that they are most receptive of advice on the subject of prevention.

It is advisable, therefore, that in countries unencumbered by the historical background that has led to the "gap-filling", but usually controversial, pattern of infant welfare centres, the problems of maternal and child health must be regarded as a whole, and must be tackled as a whole.

Preventive and curative work should accompany each other. Those who mainly deal with sick children in hospitals must learn that their duty is not only to cure the sick child, but to prevent a recurrence of his disease. This can be done by enlisting the co-operation of the parents in every way possible and by taking the time and trouble to explain how the disease arose, and how it can be prevented from arising again. Doctors and nurses must recognise that, for children particularly, out-patient are as important as in-patient services. The co-operation of the parents is

even more important than the co-operation of the laboratories, and the welfare centres and health visitors are simply an extension of the hospital in efforts to make and keep the child healthy—physically, mentally and socially.

Prevention and cure are not two weights to be balanced against each other, but two essential elements that go to forge one weapon.

The following points should be considered :

1. Treatment of disease in mothers and children must be provided and be in accordance with the best standards available in the area. This must include hospitals, dispensaries and health centres that will provide opportunities for :
   (*a*) observation and investigation
   (*b*) competent treatment
   (*c*) advice and demonstration for prevention
   (*d*) follow-up and supervision.

2. " Welfare centres " may develop, but they should develop as a logical extension of the hospital and dispensary services. Both treatment and prevention as *applied to individuals* should be available throughout the service, but in varying degrees according to the need. Although it may be logical for local authorities to be responsible for preventive medicine in its impersonal or mass operations (such as water supply, refuse disposal and food inspection) the individual health services should all be directed by the same authority. These personal or individual services include hospitals, dispensaries and welfare centres.

3. Home-visiting must be an integral part of the personal health services. The proportion of home-visiting to other activities must depend on the needs and on the available personnel. Some home-visiting is essential, but there can be no academic regulations on this subject.

4. In some places antenatal clinics are popular. In others too much emphasis and faith is placed on institutional deliveries. Maternity work should include more attention to domestic economy and nutrition, and to the continuing care of the family.

5. School health work should be included in the maternal and child health programme. This must undertake medical care and health education as well as routine inspections.

6. Records must be kept so as to ensure continuity of care and of follow-up between home, health or welfare centre and hospital.

7. Vital and other statistics must be encouraged. Without them it is impossible to assess the extent or the effect of work done.

8. Doctors, nurses, dispensers, midwives and sanitary inspectors must be well trained in child care and in nutrition. Where the basic training has been defective, refresher courses, conferences and printed material must be organised in order to

provide instruction and maintain interest. All training must aim to correlate diseases with the conditions that produce them. It is useless to think that any worker can do much to prevent disease unless he knows a good deal about what he is trying to prevent.

9. An adviser in Maternal and Child Health should be appointed at the Ministry of Health or Medical Headquarters. This is not in order to create a separate or special department, but in order to see that the interests of mothers and children are given one consideration with respect to :

(*a*) Hospital, dispensary and clinic accommodation
(*b*) Training of personnel
(*c*) Research and demonstration projects
(*d*) Disease control programmes.

10. It is essential that more opportunities should be provided by national and international bodies for the investigation, assessment and discussion of various methods of organisation and administration of maternal and child health services.

Finally, I should like to refer to the functions of the health educator. Modern medicine is running one major risk. Its enthusiasm for specialists is a menace where the introduction of new specialists leads the basic workers to imagine that their functions are now limited. If the introduction of the health educator, the social workers and the nutritionist are going to make the doctor and the nurse believe that these functions no longer concern them, then these workers are indeed to be deplored.

The doctor and nurse must be competent to give all the health education that is necessary or advisable with respect to their patients. No " health educator ", however well trained, can provide the personal and specific advice and counselling that should come from the doctor or nurse, though he or she can do much to expand or reinforce this advice. On the other hand, there are numbers of people in every community who are *not* attending doctors, clinics or hospitals. These are the people to whom the non-medical health educator can be of service. In schools, training colleges, trade unions, clubs and cultural societies—these are the places where someone trained in the techniques of teaching can do much to arouse interest and provide information about health.

Conclusion

Unless the maternal and child welfare centres are sufficiently alert and flexible to be adapted to the needs of the people, they will inevitably degenerate into milk and immunisation stations.

If they are adapted to the needs of the historical and geographical exigencies, they become important agents for health, health education, and community well-being.

TESTING A PUBLIC HEALTH NURSING PAMPHLET*

By MARIE FORD and ALBERTA B. WILSON,
Minnesota Department of Health

A RECENT addition to the printed material available for distribution by the Minnesota Department of Health is a brief, easy-to-read pamphlet titled " The Public Health Nurse Serves the Family ".[1] The idea for such a pamphlet is not new. What makes it unique are the techniques that were applied in evaluating the pamphlet before it was published. In the process of evaluation, many people got into the act, including the general public.

The material to be used in the pamphlet was carefully checked by qualified professional people to ensure technical accuracy. This was an essential part of the preparation of the material, but it did not guarantee that the information would be understood by the people for whom it was intended. To find out if it would be, the material was submitted to a representative sample of the general public. Their reactions served as a guide for making additional changes. The process provided an opportunity to evaluate the material while it was in rough form—at a time when changes could still be made.

Editorial Approach

In the early planning stages, we decided that the pamphlet was to be focused on the family. This focus is implied in the title, and it is maintained throughout the pamphlet. The next step was to write a statement of purpose :

> The pamphlet is to be a simple statement of ways the public health nurse helps individuals and families. It is intended for both the supporters and consumers of public health nursing services.

These two steps guided us in the selection of pertinent information to be included in the pamphlet.

* Reprinted, with permission, from *Nursing Outlook* (U.S.A.), May, 1955.

The content was carefully prepared by a committee of three nurses in the section of public health nursing in co-operation with the health educator. Before they did this, they surveyed the available literature on the subject and analysed the characteristics of public health nursing services which are peculiar to Minnesota.

In writing the material, the committee's goal was to phrase public health nursing concepts in simple terms that would have meaning for the general public. Here is an example of how they had to revise the material in order to reach this goal.

First version

> The public health nurse helps parents understand and accept the stages of personality growth and development that each child goes through.

Second version

> Children go through lots of phases in growing up that may trouble parents. The public health nurse helps parents understand and accept their child for the person he is, with his own physical and emotional needs.

Because the pamphlet was intended for broad general use throughout the state, it created other editorial problems. Since there are wide differences in the scope of the public nursing services that are offered in various communities, we could mention only the services that are common to all communities. For instance, because well-child clinic services are by no means general in the state, child health services were discussed in a general way without any reference to specific clinics or services.

Another editorial problem had to do with the relationship of the public health nurse to other professional health workers. For example, although the public health nurse does include nutrition education in her work, her contribution is, in part, dependent on the nutritionist and others who work directly in that field. The limited space in the pamphlet made it impractical to spell out these inter-relationships in detail, but by revising the material, the committee got around this editorial problem :

First version

> The public health nurse helps home-makers plan meals that meet the nutritional needs of the whole family. She aids them in planning diets to meet special needs of growing children.

Second version

> Much is now known about the foods we need for good health. The public health nurse brings knowledge about nutrition to home-makers. She helps them apply it to the needs of the whole family and to the special needs of children.

The second version implies the basic work that others do in the field, without in any way minimising the public health nurse's services. The committee spent many hours in devising ways to express the exact shade of meaning in a minimum number of words.

When the material was in rough form it was submitted to other members of the nursing staff, the administrative personnel, and the various specialists whose fields it touched upon. Their comments and suggestions were incorporated in the revised material.

The rough copy was then submitted to the state's eight district generalised nursing consultants at a staff meeting where they had an opportunity to help clarify the public health nursing concepts that the committee had formulated and to express these concepts in simple terms that the general public would understand. It gave the nurses who were to make the most direct use of the pamphlet a chance to share in the process of thinking each problem through as the pamphlet was developed.

To help make the pamphlet local in character, we left adequate space on the fourth page for the local health department's imprint. The only reference to the state agency is in 6-point type at the bottom of the page.

Testing for Readability

Throughout the pamphlet, the committee used as many one-syllable words and short sentences as they possibly could—a combination that makes for easy reading and comprehension. Where possible, they used personal words, such as "you" and "yours", and personal sentences directed to the individual reader in order to express public health nursing concepts in warmly human terms. They did not, however, merely assume that they had achieved this goal. Instead, they applied a test instrument designed to measure how easy the material was to read and how much human interest appeal it had. That instrument was a simplified form of the Flesch reading ease formula.[2] The relationship between the number of one-syllable words and the average sentence length in 100-word samples was the yardstick that was used for measuring reading ease. The measure of human interest was the ratio between the personal words and personal sentences in the same 100-word samples. Since there were only 800 words of copy, the formula was applied to the entire pamphlet. The scores for each 100-word sample were averaged. The objective was to produce material that would rate "fairly easy reading" and "highly interesting".

The first time we applied the formula the material scored 67 on the Flesch scale for reading ease. A score of 60 to 70 is rated "standard", and is comparable to the reading ability of persons on an eighth- or ninth-grade educational level. On the human

interest scale, the material scored 41. A score of 40 to 60 is rated "highly interesting".

The committee considered the human interest score satisfactory, but they needed to make the pamphlet easier to read, since it was designed for widespread distribution among the people in the state. Here is an example of how they rewrote one concept that was extremely difficult to express in simple terms and by using a minimum of words :

First version

> People must learn to live safely with modern machines, industrial processes, and chemicals. Together, these health hazards are a major cause of death. Most of these deaths are due to carelessness and lack of knowledge. The public health nurse helps save lives. She alerts people to safer ways to work and play. She gives them knowledge that may keep them from serious injury or even death. She shows them how to avoid accidents.

Second version

> Machines, solvents, chemicals, and drugs are part of our daily lives. We use them in our homes. They help us do our work. They make our lives easier and more pleasant. But they may cause injury or even death. We need to know what these health hazards are. We must act on that knowledge. The public health nurse helps people to live safely—in the home, on the farm, at school, and on the job.

In the second version there were 62 one-syllable words in contrast to the 51 in the first version. The sentence length was reduced from an average of approximately 11 words to 9, and the number of personal words was increased from 7 to 9. The number of personal sentences was increased from none to 6. This measurable progress was a tribute to the staff's widespread participation and interest in the project.

In rewriting, the committee concentrated on the 100-word samples which had the weakest scores, although they studied every section of copy. In its final revision, the material rated a score of 54 on the human interest scale, in contrast to the original score of 41, and it rated a score of 75 for reading ease. A score of 70 to 80 is rated " fairly easy reading " and is comparable to the sixth-grade educational level. According to the 1950 census reports, 85 per cent of Minnesota's adult population have had at least 6 years of schooling.[3] Although it is not certain that educational level reflects reading ability, the reading ease score indicated that the material would be understandable to most of Minnesota's adult citizens.

Preparation of the Questionnaire

It was at this point that we turned to the general public for further help in preparing the pamphlet. The device we used was a questionnaire limited to 11 queries. The plan was to ask representatives of the general public to read the mimeographed pamphlet material, and then answer the questionnaire. Some of the questions were the objective type ; others called for comments. The theory was that an analysis of varied types of response would contribute to a more effective pamphlet. As Knutson states, such tests are a means of obtaining the other man's perception or interpretation of the message, so that changes can be made to take into account his pattern of understanding and his way of life.[4]

We did not need an elaborate questionnaire that would give us a statistical measure of what readers had learned from our material. We wanted to find out whether those who read it found it interesting and easy to understand. We wanted to know whether our material answered their questions about public health nursing services. If the respondents had other questions, we wanted to know what they were. We wanted to know what information the readers found particularly interesting and helpful, and which of the services they would find most helpful. Did the respondents understand the purpose of the pamphlet as the staff had stated it in one of the first working sessions ?

Selection of the Sample

At a monthly meeting of the generalised nursing consultants we asked those who were interested to distribute four copies of the mimeographed material and of the questionnaire in their local communities. Two copies were to be given to board members of the nursing service and two to persons in the community who had not made any personal use of the public health nursing services. A covering letter explaining the purpose of the survey was attached to the material. The respondents were not asked to sign their names.

The generalised nursing consultants returned the completed questionnaires to the state office. The returns, which came from four widely scattered rural areas in Minnesota, gave us a total of 16 completed questionnaires from persons whose mean educational level was 12.5 years.

Findings of the Survey

The responses indicated that 4 persons (25 per cent) found the material highly interesting ; 11 (69 per cent) found it interesting ; 1 (6 per cent) found it mildly interesting. All 16 respondents found the language easy to understand. The material answered all of the questions about the services of the public health nurse for 10 persons and most of the questions for 5 persons. One person did not indicate her reaction to this question. The material was

slightly new to 11 persons (69 per cent) ; mostly new to to 1 (6 per cent) ; not at all new to 4 (25 per cent).

Their comments pointed up the need for certain changes in the material. In our attempt to focus on the family, we seemed to have lost sight of the community aspects of the service. Two readers pointed out the need to present an over-all picture of " the place this family service has in furthering community welfare ". This relationship eventually became the central idea which runs through the entire pamphlet.

One respondent asked whether a comment on the way agencies are financed should be included. In the finished pamphlet we added a sentence to answer this question as it relates to the financing of agencies in Minnesota.

An analysis of the replies on the subject matter which the readers mentioned as most interesting and helpful revealed that the public health nurse services offered to the growing child were referred to 12 times out of a total of 40. Next highest in rank order, mentioned 7 times, was the care of the sick in the home. Six persons mentioned the scope of the nurse's work ; and 4 mentioned maternal and infant health. Better family understanding (mental health) was mentioned 3 times, and control of communicable disease 3 times. Both nutrition and industrial health were mentioned twice. One person mentioned safety education " because at the present time I am interested in safety ". There were more responses than respondents because some persons mentioned more than one topic.

When we compared the stated purpose of the pamphlet and what the readers thought was its purpose, we found that almost without exception they did understand it. A typical response was : " To make the community realise the important role the public health nurse plays. I don't believe older people, who are taxpayers, know we have public health nurses or realise all that they do."

Any doubts that we might have had about the ultimate usefulness of the finished product were settled by our readers' responses. One of them said, " I enjoyed reading all of the material. It is not so long but that the average person can sit down and read it in a short time." Another said, " I would like to see this material distributed to every family in the county and to all the teachers in the schools." One board member put it this way, "I have been closely associated with public health nurses but never realised the scope of their work. The information should go to every family in the county." A number of persons asked if enough people knew about the service.

The responses also indicated some of the misconceptions about public health nursing services that might occur. One reader stated that the public health nurse " can determine the illness for a school-

age child and keep the disease from spreading". The fact that even one reader could so interpret the material led us to delete the sentence, "She assists in the control of communicable disease in the school." The sentence, "She alerts parents and teachers to signs of illness", was changed to "She alerts parents and teachers to recognise what may be signs of illness." And the following statement was added: "She helps them understand why each child needs regular medical examinations."

Our Evaluation

It was apparent that readers with an educational level of 12.5 years found material that was written at the sixth-grade level interesting and easy to read. This suggests that readership is not necessarily lost when material for general distribution is written at an educational level that is considerably below that of most persons who will read it.

In evaluating another pamphlet which dealt with the subject of preparing children for school, 57 per cent of a group of 21 mothers had rated the material "highly interesting", in contrast to the 25 per cent who rated the pamphlet on public health nursing "highly interesting".[4] None of the readers of the first pamphlet had rated it "mildly interesting", in contrast to the 6 per cent who so rated the public health nursing pamphlet. The difference in subjective evaluation appeared to be in the subject matter and the reader's personal identification with it. In the one case, the experimental reading group comprised mothers of pre-school children. These readers related the material to their own lives and patterns of living. The readers of the public health nursing pamphlet did not have the same immediate personal identification with the work of the public health nurse, even though every effort was made to express these concepts of service in warmly human terms.

The relationship between personal interest and needs was further pointed up in responses to the questions, "What information did you find particularly interesting and helpful?" and "Which of the services of the public health nurse would be most helpful to you and members of your family?"

The sum of all the replies indicated that all sections of the pamphlet had intrinsic interest. Individual sections, however, were interesting to respondents in relation to their own needs. The women who selected the section on how the nurse helps mothers of newborn babies had small babies. One mentioned "the service she gives to schools since I have children in school." Only a few of the replies related to all the programme and mentioned the scope of the work.

Other responses pointed up areas which indicated that there may be a need for additional public education. In 1953, four Minnesota

children under the age of 15 died of tuberculosis and 243 died as the result of accidents. And yet, only one respondent mentioned safety as the area of greatest interest. We thought that this justified our including in the pamphlet a specific section on safety and that it suggested the possibility of giving greater emphasis to our safety programme.

Producing pamphlets of this type takes time, but it is well worth the effort. Pre-testing educational materials has become a standard procedure in the Minnesota Department of Health.[7,8] Specific testing techniques must be adapted to each specific pamphlet that is produced.

Although our objective is to increase the effectiveness of pamphlets, the by-products are equally significant. The contributions that the personnel of a number of other public health specialities made to the final product gave the approximately 25 nurses who worked on the pamphlet a greater appreciation and understanding of the services that are provided by the staff in the allied health fields. The time that the staff spent in a group project to develop simply written material was an educational experience which will carry over into other working situations. Joint participation contributed to good staff working relationships and stimulated interest in the effective use of educational materials. Findings from pretesting procedures have significant implications for staff planning and the evaluation of nursing service programmes.

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THE SELECTION OF VISUAL MATERIALS*

By W. EMRYS DAVIES, B.A.(Admin.), B.Sc., M.Ed., Ph.D.,
Education Officer, The Central Council for Health Education

VISUAL materials form an essential part of the equipment of the health educator. With their help teaching methods may be rendered more effective, authentic learning may be secured, and time and effort may be saved in the teaching and learning process. If, however, full advantage is to be taken of visual aids, the same careful thought must be given by the educator to their selection as is normally devoted to the preparation of verbal materials. It may be profitable, therefore, to consider some of the guiding principles which the health educator should apply when faced with the problem of selecting the most effective aids from the mass of available materials.

Obviously the first requirement of an educational aid is that it should be relevant to the content to be learned. But it is not enough to select an aid that is relevant: it should be also the most appropriate. Thus, while a diagram designed to assist a verbal description of the structure of the human ear is wholly relevant to its subject, it will be less effective in use than a model of the ear which provides not only a sectional view of the structure but also an indication of the depth and form of its components. Only too frequently the principle of relevance is applied without adequate consideration of the appropriateness of the aid compared with other and alternative materials; that is to say, the aid to hand is that selected for use, regardless of its relative value.

In this matter of selection, then, the health educator has to

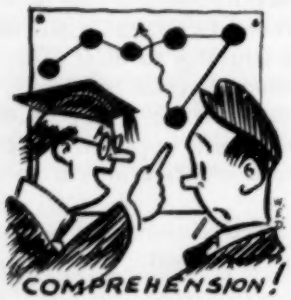
*A paper presented to the Annual Conference of Sanitary Inspectors, September, 1955.

choose the most appropriate aids. Appropriateness may be considered from three points of view: that of the learner, that of the educator, and that of the learning process.

AIDS AND THE LEARNER

(a) Comprehension

To be effective, an aid must be comprehended by the learner; that is, correctly interpreted. The capacity to interpret an aid depends in no small measure upon the ability of the learner. If, for example, it is decided to illustrate a talk on diphtheria immunisation by some representation of the remarkable decrease in the incidence of this disease during recent years, a numerical data chart may be suitable for use with a class of student nurses, a graph or isotype chart with a lay audience of average intelligence, but, with others of more limited ability, the decrease may best be illustrated by means of a series of bottles containing coloured beads.

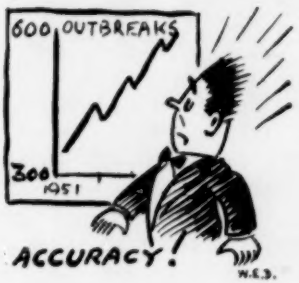


The successful interpretation of an aid requires more than the requisite level of ability; it demands a background of experience in the kind of medium in which the aid is expressed. Perception is a skill to be acquired; it is a product of experience. Thus members of African tribes who dwell in remote areas, and who are in consequence unsophisticated in the observation of two-dimensional illustration, find great difficulty in recognising the contents of still pictures and diagrams. So, too, many in our own society would have difficulty in interpreting correctly a graph which involves a logarithmic scale, a device which lies outside their experience. When selecting an aid, therefore, it is a wise precaution to test it for comprehension by trying it out with some who have a background of experience comparable with that of those for whom the aid is intended.

Comprehension is further assisted if the visual material is as concise and as simple as it can be. While it is true that significant items need to be emphasised it is equally important that irrelevant details be eliminated or at least subordinated. If a teacher of elementary physiology is describing in general terms the distribution and location of various organs, simply designed cut-outs will be more effective aids than a chart of the body showing so much minute detail that it presents a picture which at that stage of learning is unnecessarily complicated and therefore confusing.

When, however, an aid of necessity involves complex details,

relationships, or processes, it is helpful to build up the aid piece by piece as the relevant and successive items or stages are explained orally. In showing, for instance, how food poisoning may be spread by careless toilet behaviour, simple diagrammatic illustrations of the bacteria responsible for it, the mouth and throat passages, the intestinal tract, toilet, hands, food, and again the hands and mouths of others may be displayed on the board step by step. This pictorial synthesis is much more effective than the presentation at the outset of a complicated array of visual material the content of which must be analysed before it can be comprehended and which, by its complexity, may set up a preliminary resistance to learning.



An aid may be comprehended and yet may leave an erroneous impression on the mind. Suppose, for example, a graph is prepared to illustrate the sharp increase in the number of outbreaks of food poisoning in this country during the past few years. It may be both convenient and impressive to produce it in such a form that the vertical scale which indicates the number of outbreaks in any one year begins well above its zero value. This device, which is likely to create a grossly exaggerated, if striking, concept of a sorry development in time, belongs to the craft of the propagandist rather than to the art of the educator who seeks to provide accurate, truthful information. The health educator may, of course, present a misleading aid without deliberate intent. Thus, when it is necessary to show objects which are magnified or reduced in size, or speeded up or slowed down in movement or growth, every care should be taken to establish a correct sense of proportion in the mind of the learner by indicating the true size or speed of the subject of illustration.

(b) Interest

Comprehension demands some degree of effort on the part of the learner. Now mental activity is stimulated when interest is aroused. The health educator, therefore, should select materials of intrinsic interest to the learner. Dust-covered models, torn charts, faded photographs, illustrations too small to be seen without strain, and out-of-date illustrations lack the quality of attractiveness which is possessed by aesthetically pleasing and contemporary materials which command attention and stimulate interest.

Monotony in the presentation of visual materials may be as

destructive of interest as monotony in the traditional verbal approaches. If from time to time alternative but equally appropriate aids are introduced they will contribute that element of variety which adds spice to learning. On occasion and with advantage the playlet may replace the moving picture, the film strip the practical demonstration, the visit the display.

Interest is shown in any visual representation of people in fact or fiction if they are familiar figures held in esteem or affection. Thus portraits of celebrities, the animated characters of Disney, or even photographs of people like themselves may stimulate much interest. It seems, however, that if the people or characters shown appear to the learners to be far removed in circumstance from their own lives, it may be assumed by them that what is true of such people is not true of themselves. When, therefore, it is desired to lead people to identify themselves or their behaviour with the subjects of illustration, it may be more effective to introduce impersonal and conventional symbols such as isotypes, match-stick figures, or silhouettes.

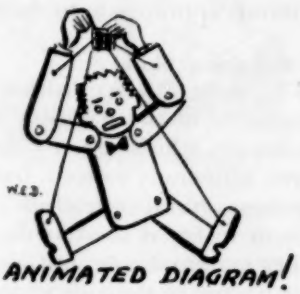
People have a natural urge to handle materials of all kinds, and interest in the learning process is intensified when this urge is satisfied. A flannelgraph which presents catering workers with a multi-choice problem in food storage, a magnetic blackboard which provides members of a team with a problem in playing tactics, an electric quiz board which sets questions on nutrition and lists relevant answers in random order, or a display of models, specimens, or objects, all have added interest value if active personal participation is invited, that is, if the learners are given an opportunity to manipulate visual aids while making decisions for themselves.

AIDS AND THE EDUCATOR

The kinds of materials selected by the educator will be, and should be, determined in no small measure by his personality and especially by his interests and talents. Should he possess

artistic skill his own illustration in chalk, pen, or brushwork will enliven his teaching far more than the use of professionally prepared aids. His drawings become extensions of his personality, especially when they are introduced naturally into his teaching method.

Others, who have little skill of this kind, may possess a sense of drama which enables them by movement, gesture, expression, or inflection to create visual concepts with a minimum use of extraneous visual material. They themselves behave as "animated diagrams".



Most educators have less visual talent than these, yet may improve their skill in visual representation by the exercise of imagination and by practice in the manipulation of visual materials. All should regard pictorial representation not as supplementary teaching devices but as materials to be wholly integrated into their teaching approach. Health educators would be wise, too, to select the kinds of aids which are of greatest interest to themselves, and which they are thus likely to use to the greatest effect.

If the educator wishes to use a particular aid, perhaps a film which deals with food hygiene, but finds that it is not immediately available, he has to consider whether it is better to postpone the consideration of the subject until the aid may be obtained for use or to continue the intended instruction by making use of alternative and readily obtainable still-picture material. His decision will rest upon such factors as the relative advantages of the film over the still pictures and the urgency of the topic.

The effectiveness of visual material is not to be assessed by the amount of financial and human resources spent on their production and display. A health exhibition, for example, may comprise a great assembly of material obtained and arranged at high cost. Yet because of its complexity and extent, the exhibition may lose much of its potential educational value. It would be better for those responsible for its organisation to spend their

time and energies in providing a series of small and more economically produced displays, each devoted to a single theme and changed at reasonably short intervals of time.

AIDS AND THE LEARNING PURPOSE

The choice of aids will be determined also by the purpose which the educator has in mind. A few examples of quite different learning situations may serve to show the need to select materials appropriate to them.

(a) Acquiring Skills

The successful acquisition of a skill demands direct personal experience in the handling of the actual materials, animate or inanimate, which are involved in it. Thus the young mother learns ultimately to feed, bathe, and dress her baby by performing these several operations. Her learning will be successful not only in so far as she has the natural urge to become competent in her maternal role, but also to the extent to which she makes effective use of the aids which lie to hand, and these include the baby.

Frequently, however, it is impracticable to "learn by doing" in an entirely realistic situation. The schoolgirl in her homecraft lesson uses a life-size doll as a substitute for the living infant. In the road-safety lesson, children operate model vehicles in the safety of the playground "highway". Yet the learners will benefit to the full by such pseudo-realistic situations only when the materials they use are placed in their true perspective. Thus the schoolgirl should be encouraged to share in the care of a living infant, the road-safety class should be taken to a road-crossing to observe and comment upon the behaviour of road-users, or, if this be impracticable, to see and discuss a film which depicts the traffic scene.

(b) Acquiring Insight into Behaviour

If the purpose of the educator is to lead people to gain insight into their own behaviour, their duties and responsibilities, their potentialities and limitations, drama may be used to good effect, the audio-visual material making a double impact on the learner's mind. By substituting make-believe for reality, players and audience may come to appreciate the nature of the problems set by a playlet. If, too, the issues are relevant to their own

lives and if they are made subjects of discussion, the audience may achieve an insight into their own motives and behaviour which can lead to the formation of healthier attitudes which are the springs of healthier living.

This approach through drama, through observation of it or participation in it, is especially profitable in the field of human relations, so much so that the Central Council for Health Education has published a number of sound-filmstrips prepared with a view to stimulating the discussion of common problems. Moreover, playlets which illustrate real-life issues have been written by groups of public health workers who have drawn upon their own experiences in writing the scripts. One such script, written by a small group of public health workers in Salford, may serve as an example.

"FAIR SHARES"

Narrator : "Fair Shares" is the story of an incident taken from life. In presenting it, we invite you to consider the problem that has arisen in the story.

Mr. and Mrs. Preston have been happily married for ten years and have three children. Mr. Preston is employed as a clerk in a cotton mill. Mrs. Preston is finding it difficult to make ends meet. Then something happens to upset the harmony in the home. One afternoon Mrs. Bolton, whose husband works for the same firm, calls at the Preston home. Over the usual cup of tea Mrs. Preston complains about the cost of living.

Mrs. Preston : "Things are really getting me down. Jenny needs some new shoes, and Bobby's coat won't last another winter, and Christmas is on top of us. Sometimes I get quite disheartened. Mind you, Jack's very good to me and does his best to help."

Mrs. Bolton : "Of course, things are difficult, but not nearly so bad as they were before they got the last rise at the mill."

Mrs. Preston : "Rise ? What rise ? "

Mrs. Bolton : "Why, the rise in wages with back pay from last June. I found the bonus very useful, I can tell you. We got lino for the kitchen floor and we've been able to put some cash away for Christmas."

Mrs. Preston : "There must be some mistake. Jack can't have got the rise or the back pay or he'd have told me."

Mrs. Bolton : " But they *all* got it."

Narrator : Mrs. Preston is very upset and when her husband comes home he finds her most indignant.

Mr. Preston : " Hullo, Lil. Is tea ready ? Has my evening paper come ? Where are my slippers ? "

Mrs. Preston : " Don't you ' Lil ' me. Get your own slippers."

Mr. Preston : " Get my own slippers ? What's the matter with you ? "

Mrs. Preston : " What's the matter with me, indeed ? I'll tell you what's the matter with me. Here I am, struggling and scraping to make ends meet while you're putting half your wages in your own pocket. And I'd like to know what you're spending it on, too. And what about the back pay you got ? "

Mr. Preston : " Here, who's been talking to you ? Some trouble-maker. That Bolton woman, I'll bet."

Mrs. Preston : " Never mind who's been talking to me. I know all about it. And to think that after all these years I find I can't trust you."

Mr. Preston : " Listen to me, Lil. I've always given you a fair share, haven't I ? You've never grumbled before, have you ? And remember this, what I earn is my own affair."

Narrator : Here then is the story of Mr. and Mrs. Preston. Is what Mr. Preston earns really his own affair ? What do you think ?

It will be observed that no attempt is made by the authors to moralise or to indicate a solution to the leading question raised in the playlet, namely, the financial relationships that exist between husband and wife. The drama is intended only to stimulate discussion of this question by a group of interested adults. Used in this way, drama elevates audio-visual experience from the level of passing entertainment to that of effective learning through discussion.

(c) Acquiring Knowledge

The inaccessibility of reality is frequently a limiting factor in gaining knowledge. Because the material to be considered is too distant in time or space, too dangerous, too small, or too big to be seen as it really is, the outer world of experience is introduced into the learning situation artificially by means of models, specimens, objects, photographs, films, or the like.

If, of course, the real-life situation is within reach, an organised visit may be a highly valuable experience. By visits to clinics, sewage disposal works, water undertakings, or pasteurisation plants, people may extend their knowledge and improve their attitudes. Especially is this so when the visitors are prepared for the visit, have the service of competent guides, witness demonstrations of processes by skilled workers, and have opportunities to handle relevant materials. The visit involves a multiplicity of learning aids: it is a multi-sensory experience involving not only seeing but also hearing and touching. It is this combination of approaches to the mind which renders the visit a memorable learning experience.

If, however, reality is quite inaccessible, visual aids must act as substitutes for it. Yet it is important to ensure that models, specimens, and objects which are dissociated from their natural environment are placed in their true perspective by means of still or moving pictures.

The moving picture is particularly effective when it is desired to illustrate or analyse motion, especially in situations where it is impracticable or impossible to produce it in actuality. The moving picture can make motion observable which is normally hidden from view because of limitations of size, time, or distance, as when it shows the growth of bacteria, the digestion of food, or the spread of infection in a community. The film can present natural and life-like circumstances when visits are impracticable; it can cover a broad area of content in a short space of time. It is of special value when used with those whose language competence is limited.

In selecting a film, however, it is necessary to consider its length. If, as often happens, a film contains a number of related themes, each should be presented and considered in turn. For example, a film which deals with children's ears includes three main topics: firstly, the structure of the ear and the way in which sound is transmitted through it, secondly, the nature of the ear trouble, and thirdly, methods by which children suffering

from defect or infection may be helped. It is better to show each theme in turn, to discuss it adequately before proceeding to the next, than to present the film in its entirety at a single session.

If motion is not an essential part of the desired illustration, a still picture may serve the purpose better. Still pictures are often more effective than moving pictures because they concentrate attention on significant points, are easier to control, and are available at the opportune moment.

The filmstrip, successor to the lantern slide, is relatively cheap to produce and filmstrip projectors are readily available to the health educator. But the ease of access to the filmstrip has its dangers. It may be too readily assumed that the aid itself will serve a comprehensive teaching purpose; in fact, its interpretation by the educator, as with that of all visual material, remains a fundamental requirement.

FELLOWSHIP IN HEALTH EDUCATION

As a result of a gift from Mrs. C. R. Burton the Central Council for Health Education was able to present a Fellowship to the Diploma Course in Health Education to cover the fees of one student.

PRECISION IN POSTER RESEARCH*

By POSTER RESEARCHER

Another important move towards precision in poster research has been taken on the initiative of Mills & Rockleys Ltd. In 1949 they published a report of a research survey which dealt with the number of people who remembered *seeing certain poster campaigns. They have now published the results of a survey into the facts about people who have an "opportunity-to-see" an average poster campaign. A typical fact revealed by the Survey is that in a town of about 100,000 population, 16 locations will give a repetition value of about 20 opportunities-to-see per week, and at least 80 per cent cover. If the number of locations in the campaign is increased to 24, then repetition would rise to 29 and the cover to about 85 per cent.*

MILLS & ROCKLEYS LTD. have shown a remarkable and praiseworthy initiative in a most difficult job of market research, namely, the "Size and Nature of the Poster Audience", the results of which they have now published under that title.

For other media, particularly the Press, the task of research is comparatively easy. The Audit Bureau of Circulations will give over-all totals of circulation for nearly every newspaper and periodical in the country. Many publishers will supply a breakdown of their subscribers. The provincial press can very often, and very willingly, prove their sales in any given area, and indicate the type of readership in that area. The amount of data that has accumulated, and is still being accumulated, is formidable, and without doubt it is greatly welcomed.

In the field of poster research the position is much more difficult and the industry so far has been feeling its way.

The present effort was undertaken by Research Services Ltd., with B. D. Copland carrying out the task of analysis, and to show how bewildering the approach can be, one has only to look at the "Historical Background", published as an appendix to the Study. There it is recorded that, until 1946, poster research

* Reprinted from *World's Press News*, June 10, 1955.

largely took the form of simple traffic counts, which in effect was a count-up of the number of times a poster was passed-by. It was not possible to differentiate between 1,000 people each passing a poster once, and 100 people each passing it 10 times.

Since then important developments have occurred on both sides of the Atlantic, but this particular Survey—and here one quotes from the Preface—was "directed to learning more about the audience of poster campaigns rather than individual sites". The basic work was carried out in nine towns of different sizes and characteristics, and it was in effect an investigation into the movement of people—to discover where they went when they left their homes and places of work.

In order to appreciate the value of this Survey, it is necessary to give a summary of the methods which were used. The research, we are told, was carried out by questioning, at random, samples of people about their journeys past a random sample of poster locations in the area. The names and addresses of informants were selected at regular intervals from the parts of the register of electors which covered the whole of the marketing areas concerned. The field-work was carried out by members of Research Services' full-time staff of trained and experienced interviewers together with further interviewers drawn from a supplementary panel available for periodic assignments.

Census of All Poster Sites Taken

Apart from field checks, all questionnaires were systematically edited in the office for internal consistency, plausibility and omissions, and query slips were issued as a matter of routine where there was any doubt.

The first step was to take a complete census of all the sites in each marketing area and to plot them on maps. The sites were then grouped into locations—places where there are one or more poster sites. If two or more sites were simultaneously visible from the same point—e.g., one on each side of the road—these counted as one location. It was neither practicable nor necessary to ask the informants questions about their journeys past *all* the locations in a marketing area, and the maximum number of locations studied was sixty.

When introducing the survey to informants, no mention of posters was made, experience having shown that it was not only better but less confusing to present it as a survey of traffic past key points. So that no journeys should be omitted, informants were asked about those made for particular reasons: work, shopping, entertainment, to see or take part in sports. They were also asked about other journeys, such as visiting friends, taking children to school, going to church, to the library, and walks.

That, in broad line, is the procedure followed in the field-work of obtaining the basic information.

The analysis of the information is highly complicated and technical, and the uninitiated reader will not always find the booklet easy to follow. Nevertheless, his task is made easy by the explanatory material. For example, it is explained, in the Ipswich marketing area—comprising the City of Ipswich, with a population of approximately 80,000 adults, plus a surrounding area containing a further 43,000 adults—a campaign consisting of 78 locations was found to have achieved a cover of 71 per cent. This represents in total an audience of about 87,000 adults. Each person had, on the average, about 27 opportunities per week to see the poster.

When the campaign was increased to 30 locations the cover rose only slightly, but the number of opportunities to see, i.e., passages past these sites, rose to an average of 39 per week. These figures, therefore, indicate that the value of the additional 12 locations lay to a great extent in increased repetitions.

Three groups of conclusions are to be drawn from examination of the results of the survey, says the Report.

(1) A poster campaign can reasonably be devised which will have, in the first week, an audience of 70 per cent or more of the town's population.

The survey has established the following facts:

(i) Audience and repetition values for poster campaigns can be measured (this is only now receiving general acceptance).

(ii) That the normal units of measurement for other media—audience, cover and frequency—are applicable to poster advertising.

(2) The importance of hinterlands.

The samples of the survey were drawn, not only from the administrative boundaries of the nine towns, but also from the areas surrounding each town.

(3) The relative audience and repetition values of poster campaigns consisting of different numbers of sites in different towns and areas within the size covered by the survey can be estimated.

This is, perhaps, the most important conclusion of all. Two points should be noted here:

(a) There was no question of looking for some rule of thumb, based on the experience of this survey, which could be applied in all circumstances. All that was sought was the kind of guide which would help a skilled and experienced advertising man to do the job of poster schedule planning more efficiently—in other words, some underlying pattern of performance which would permit *a reasonably reliable comparison of two or more alternative schedules.*

(b) The idea of some association between the number of people in a town and the number of poster sites needed to do a satisfactory job is not a new one. It has been fashionable to consider " one poster per so-many-thousand population " as an outmoded and unduly rigid formula, but it reflects the fundamental truth that the more people there are the more sites are needed. The survey is an attempt to answer the question, " How many more ? "

The analysis shows that despite individual idiosyncrasies of geography, town layout, traffic arteries and poster provision, there is a firm relationship between the population of the town or area and:

(i) The number of sites.

(ii) The performance in terms of cover and opportunities-to-see.

APPOINTMENT OF WHO DENTAL CONSULTANT

THE World Health Organisation has obtained the services of Dr. John W. Knutson, Assistant Surgeon-General and Chief Dental Officer of the U.S. Public Health Service, for a period of 6 months to assist in the initial planning and development of WHO's dental health programme. Dr Knutson began his assignment at WHO Headquarters, Geneva, on July 1. The appointment has been made possible through the courtesy of the U.S. Public Health Service.

Some of the activities which may be included in WHO's dental health programme are : Collection, by means of surveys, of basic information regarding the prevalence of dental diseases, the use and training of staff, and stimulation of research. The programme will be based on recommendations made by a group of consultants called together in Geneva in October 1954 by WHO's Director-General, Dr. M. G. Candau. Dr. Knutson was Chairman of this group, which included experts from seven different countries in America, Asia and Europe.

HEALTH EDUCATION

Refresher

THE CONTROL OF INFECTION IN SCHOOLS

By HUGH PAUL, M.D.,
Medical Officer of Health and School Medical Officer,
Smethwick County Borough

ALTHOUGH the death rate from infectious diseases in school children is now less than one-tenth of that prevailing at the beginning of the present century, many of the commoner diseases are still as common as ever. For example, practically every child contracts measles, a substantial proportion of the child population contracts german measles, whooping cough attacks more than 100,000 persons in this country every year, and the common cold and influenza are ever present. Diphtheria has virtually disappeared and scarlet fever is generally a minor disease, but infantile paralysis, which was rare at the beginning of the century, is now an important hazard. It is therefore essential to use every means at our disposal to check outbreaks of infectious diseases in school, however trivial the ailment. Education is very important, and serious dislocation of the school programme can be brought about by absence due to the minor infections.

Infectious diseases are spread in a variety of ways, but in general most of them are spread by one of two methods, either by the respiratory tract, i.e., through the mouth and nose, or by contamination by infected hands. It is true that one or two other diseases, such as impetigo and smallpox, may be contracted from the infected skin of the body, but these diseases are not in general an important problem, and when an outbreak of such a disease as smallpox occurs the school staff can rely on getting detailed advice on the precautions to be taken.

Respiratory Diseases

How are respiratory infections such as measles, whooping cough and scarlet fever actually transferred from person to person? The answer to this depends to a certain extent on the nature of the infecting organism. Measles is caused by a virus which is extremely small in bulk and which is very delicate. It dies fairly rapidly outside the human body, but if an infected person coughs or sneezes it can, because of its light weight, remain suspended in the atmosphere surrounded by minute (microscopic) droplets of water vapour for several hours. So the air around a child suffering from measles is infectious. The same applies to the common cold and to chickenpox, which are also virus diseases.

Whooping cough, on the other hand, is caused by a coccobacillus, a small organism several times larger than the average sized virus, but this special organism is delicate in health and dies fairly rapidly outside the human body. Scarlet fever is caused by a bacillus, a long rod-shaped organism which again is much heavier than the virus. When a carrier or a sufferer from the organism which causes scarlet fever coughs or sneezes the organisms fall to the ground within very few minutes. Diphtheria, now a rare disease, is also caused by a bacillus. It is so rare, however, that the school medical officer should at once be informed if a case occurs in a school. Now all these germs, whether virus, coccus or bacillus, are much happier and grow more freely *inside* the body than *outside*. The temperature of the nose and throat is just right for their growth and the food supply is abundant. If they are ejected from the body by coughing or sneezing they can, it is true, infect the articles on which they fall, but usually they die out rapidly, and infection with these diseases is rarely caused by infected inanimate objects. They are usually spread by direct person-to-person contact, i.e., by one child inhaling organisms ejected from the nose or throat of another child who is either a carrier of the disease or a sufferer from the disease.

There is another important point in the spread of infection in schools. Germs are like soldiers in that they are effective in relation to their numbers, and a mass dose of these organisms is much more likely to cause disease in another child than a small number. It is impossible by any known means to keep the air in a school germ-free, and although there are many theoretical ways of sterilising the air the cost is such that it is not a practical proposition in a school. The germs, however, can be made relatively harmless by dispersion or dilution. If there is free ventilation the organisms ejected into the air are rapidly dispersed and the numbers inhaled or ingested by any individual child are too few to cause actual disease. The first step, therefore, to prevent infection is to have adequate spacing of the desks and free ventilation in summer and winter, especially in winter.

Measles and German Measles

Measles is contracted by practically everybody, and in spite of a general belief to the contrary second attacks are so rare that they can be totally ignored. Most children have contracted measles by the time they leave the infants' school, and no precautions need be taken to prevent the spread of this disease in junior or senior schools. The automatic exclusion of measles contacts is quite unjustifiable in any school, although there may be individual cases in which a doctor may consider that, for special reasons personal to the child, a contact should be excluded.

The situation as regards german measles is similar. The disease is not serious. It is not quite so prevalent as measles and no special precautions are necessary. Contacts should not be excluded.

Scarlet Fever, Diphtheria and Whooping Cough

Scarlet fever and diphtheria are characterised by a sore throat, and if any child in the school complains of a sore throat medical advice should at once be sought. It should be stressed, however, that although the germ which causes diphtheria is rarely met with nowadays in school, the number of children who carry the germ which causes scarlet fever is enormous, and in any individual school there are probably a number of children who are perfectly healthy themselves but who carry the germ of scarlet fever in their throats. This germ is identical in most respects with the germ which causes tonsillitis and streptococcal sore throat, the only difference being that in some cases it causes a skin rash and in other cases it does not. This germ is called the streptococcus, and whether it causes mere sore throat or scarlet fever, the precautions to be taken are the same. A child suffering from a sore throat should be sent home and advised to consult his doctor. Unless, however, several children in the same school contract the same type of infection, or there is a succession of cases spread over several weeks or months, no further precautions need be taken. It is difficult and unnecessary in ordinary cases to clear all the children in the school of this organism, which in general does not cause any inconvenience to the carrier. Contacts should not be excluded except on special medical advice. If there be a small epidemic, however, and a number of cases arise, the school medical officer should be advised, and he will visit and swab the children's throats in order to find out if there be a specially virulent type of organism present and will take appropriate steps to deal with the situation. These steps are simple and with modern drugs are effective in a very short period of time.

Whooping cough is not common in senior schools. The majority of persons who contract the disease do so during the first ten years of life, and by the time they reach senior school

are immune. Whooping cough rarely occurs a second time. Practically all the deaths from whooping cough occur within the first three years, and in general whooping cough is a distressing but not a dangerous complaint in school life. Obviously sufferers from the disease should be excluded from school, but their brothers and sisters or other contacts need not be excluded.

Colds and Influenza

Influenza and the common cold are both caused by viruses, but their prevention and cure still elude us. A child or member of the staff who is suffering from the common cold should most emphatically be prohibited from attending school. It is in this way that the spread of these infectious diseases can be prevented. The treatment of the common cold is very simple and consists of rest in bed for a period which varies with the age of the sufferer—increasing with the years. In schoolchildren recovery is rapid, taking only a day or two, in elderly adults it usually takes a week. Influenza can have a devastating effect on attendances at school but once again there is little the teacher can do about it. Children or members of the staff showing early catarrhal symptoms should be sent home and notwithstanding the fact that the disease is most prevalent in January, which is usually a cold month, ventilation of the class rooms should be fairly free.

Contaminated Hands

Having dealt with the main respiratory diseases, we now come to diseases which are spread by contaminated hands, and of these the most important are dysentery, typhoid and para-typhoid fever, and food infections. Typhoid and para-typhoid fever are not common, and when present urgently call for the services of a doctor from the public health department. Dysentery, however, is not uncommon, particularly in young children. The organism which most usually causes it is not very virulent and infection may spread through a school, affecting many children, before its presence is realised. In some cases the children suffer from no symptoms which can be ascertained, in others they suffer from a mild diarrhoea and only in the worst cases is the diarrhoea really severe. Dysentery is spread by the infected motions of the sufferer.

A child suffering from a severe attack of dysentery or a mild attack, or who is a carrier, when he goes to the toilet *comes out of that compartment with soiled hands.* This must be regarded as fundamental. No person can pass a motion and emerge from the water closet with clean hands, and if the motion is infected by any organism of this nature his hands will carry the infection. Indeed, it is not recognised, even by many doctors, what an

enormous part contaminated hands play in the spread of intestinal diseases. It is absolutely essential, therefore, whether intestinal diseases are present in the school or not, that every child who goes to the toilet should *immediately* wash his hands, preferably in running water. The prevention of the spread of infection by the diarrhoeal diseases is essentially one of cleanliness and hygiene. Everything else is secondary and can be ignored by the teacher. Strictly speaking, it should be possible for 90 per cent of the children in a school to be passing infected motions and for the other 10 per cent to escape ; in actual fact, if complete hygienic precautions are taken, the other 10 per cent will escape. This clearly shows the necessity for personal cleanliness and for repeated hand washing.

Food Infections

Food infections are also intestinal and the majority are spread in the same way as dysentery. There are, however, some differences. More than half of the outbreaks of food poisoning in this country come from organisms which are excreted in the motions, but a large number of outbreaks are due to an organism—the staphylococcus—which is present not in the motions but in the nose and on diseased skin. The staphylococcus does not usually cause disease, except in young babies, but there is a special type of staphylococcus which causes food infections in adults. It is normally present in the noses of a large proportion of school children and adults who do not suffer themselves from any infection. This organism is also present in boils, carbuncles and impetigo, and a child suffering from any of these conditions should be excluded from school and rigid precautions should be taken to ensure that any person with any skin rash, however slight, should not engage in the preparation or handling of food. Even in the absence of skin disease it is very easy for the hands to be infected from the nose. One has only to study the habits of ordinary children, men and women, to realise how often the hand is placed in contact with the face, and it should be accepted as a generalisation that if any person has an infection in his nose his hands will certainly be infected. The remedy is simple—a high standard of personal cleanliness and repeated hand washing.

Tuberculosis

Tuberculosis is not generally an important problem in school. The infectious type of tuberculosis is comparatively uncommon in children. Tuberculous children usually have the disease localised in their glands or their bones or the central nervous system, and they rarely have the ulcerative type which is so common in the adult and which is so infectious. Tuberculosis

of the glands, bones and central nervous system is not infectious, and it is perfectly safe for a child suffering from glands or bone tuberculosis to attend school. Many of them in fact attend an open air school and other types of special school, and no precautions are necessary since there is no spread of infection. Tuberculosis of the central nervous system need not be considered, for a child suffering from this complaint is not infectious but is not likely to be seen at school, since the disease is of very great severity.

Infantile Paralysis

It is not perfectly clear how infantile paralysis (or to give it its correct title, poliomyelitis) is carried. It is primarily an intestinal disease and certainly can be spread by hands infected by a person suffering from the disease or, perhaps more commonly, a person who is a carrier of the organism. It is not clear, however, to what extent the disease can be spread by the respiratory system. The virus which causes it is certainly present in the intestines and is passed out with the motions in a virulent form. It is also present in the throat, though in lesser numbers, and it should be assumed that it can be spread either by the intestinal route or by the respiratory route. Poliomyelitis is not generally a serious disease, and 99 per cent of the sufferers do not contract anything but a mild illness of an influenza-like nature. It is only the odd one per cent who get paralysis. Nevertheless the onset of paralysis is so devastating and causes such lasting disability that every step should be taken to prevent the spread of the disease. There is little that the teacher can do, but there are certain definite precautions which he may take. In the first place he should insist once again on scrupulous attention to hygiene and hand washing. Immediate contacts, i.e., from the patient's own family, are usually excluded by the school medical officer or the medical officer of health. During a severe epidemic of the disease the teachers in the area should discourage severe physical exercise, for it has been established that persons who are infected with the organism of poliomyelitis, if they contract the disease, are more likely to suffer from paralysis if during the early stages they engage in strenuous exercise. The advice of the school medical officer or the medical officer of health should be freely sought.

To sum up, intestinal infections may be prevented by attention to personal hygiene, and a high standard of personal cleanliness should be insisted on. The respiratory complaints cannot be completely prevented, but the extent of an outbreak may be lessened by a careful scrutiny of individual children to ensure that those who show any signs of illness are sent home at once, by adequate spacing of the desks, and by free ventilation.

SUMMARY OF ACTION TO BE TAKEN

A. *Respiratory diseases*

In all cases—exclude actual sufferer until he is well again.
—ensure that ventilation of class room is adequate, and that children are not overcrowded.

Special action:

Diphtheria—advise S.M.O. or M.O.H. at once.

Whooping Cough—take advantage of occasion to advise immunisation of other young children in family.

Scarlet Fever—if several cases of sore throat advise S.M.O. or M.O.H., otherwise no further action.

B. *Intestinally-spread diseases*

Scrupulous cleanliness.

Hand washing *after* going to toilet and *before* handling food.

C. *Tuberculosis*

Children—usually no action necessary. If a child is noticed to have a *persistent* cough advise the parents to take him to his own doctor.

Adult (e.g., teacher)

Pulmonary tuberculosis in children is frequently spread by an infected teacher. A teacher with suspected tuberculosis or with a persistent cough should be referred as a matter of urgency to his own doctor or to the S.M.O.

International Report

HUMANITY'S GREATEST ADVENTURE*

By RITCHIE CALDER, C.B.E.
WHO Information Consultant at the United Nations International Conference on the Peaceful Uses of Atomic Energy

EXULTING in their new-found freedom to disgorge and to discuss the hoarded secrets of a decade, the physicists of 73 countries, meeting in the United Nations International Conference for Peaceful Uses of Atomic Energy, could promise the world unlimited power. The biologists' enthusiasm for this prospect was tempered by certain misgivings.

The common ground between physicists and the biologists was that the medical risks should not hamper the development of atomic power for the advantage of all mankind.

The Conference divided itself three ways : first, the sessions on nuclear physics and power reactors ; second, on chemical and metallurgical problems; and third, on biological and medical aspects. In the first, physicists who had been divided from each other not only by an Iron Curtain, but by a Uranium Curtain, discovered, not to their surprise, but to their gratification, that much which had been classified as " top secret " were no secrets at all, and that quite independently physicists, not only in the U.S.A., U.K., U.S.S.R., Canada and France, but in countries without an atomic power programme, had arrived at the same results and that ingenuity of scientists had conceived such a variety of reactors that there could be no question of the ultimate distribution of power. And that at costs less than the present conventional sources. The chemists' optimistic caution arose from still unsolved problems because of the eccentric behaviour of compounds and metals, due to the radiation in the reactors and the difficulties of processing a radioactive material.

The discussions in the biological and medical sessions were

* WHO Special Feature, August, 1955.

concerned with the genetical effects of radiation, with safety measures in industry, with the use of radio-isotopes in medical research and treatment, and with the disposal of atomic waste.

It was clear from the press and public concern about the radiation hazards that there was a confusion—due to the fact that there was a discussion on two levels, clear enough to the participants but not to onlookers. The first was on the level of genetical research. The second was dealing with the somatic risks to those directly engaged, or liable to be exposed, to the immediate effects of an extension of atomic power plants.

The Atom and Heredity

On the genetical issues, the scientists were as frank as the facts demanded—that we know very little about radiation effects on human genes ; that we can only judge by the evidence from plants, insects and quick-reproducing animals, and that evidence is not reassuring. As Professor Gustafsson of Sweden pointed out, for every beneficial mutation there are five hundred undesirable mutations. While the risks are confined to the individual (the worker, for instance, involved in a reactor accident) the problem is minimal. The danger will arise from a rise in " background radiation ", an increase in the natural background to which living things have been exposed in the form of cosmic rays or from the natural radioactivity of rocks, such as granite. That, in terms of the present scope of atomic power plants and present uses of industrial and medical isotopes, is not an immediate problem. But, without research, foresight and international conventions and codes of practice, the genetical effects on the population at large may be serious. The paramount importance of these discussions at Geneva was that biologists the world over have shared their misgivings and are prepared to do something to remove them. The first provision is that until the subject is better understood the increase of the radiation background should never be more than a tenth of the " maximum permissible dose " which the International Commission for Radiological Protection prescribes for workers, of 0.3 roentgens per week. The Soviet public health and industrial health codes accept the same maximum permissible dose but apply it as 0.05 roentgens per day.

Calculated Risks

" The peaceful development of atomic energy is Humanity's greatest adventure," declared Professor W. V. Mayneord of the United Kingdom, " and like all adventure must involve risks. We will try to make those risks as small as possible, but we have also the duty to see that the advantages to mankind of atomic energy are made available as quickly as possible."

The industrial hazards and safeguards were thoroughly discussed, and it was reassuring that satisfactory standards for workers in atomic plants have been worked out by independent research, but with similar conclusions. The Russians and Americans each gave accounts of reactor accidents. In the first case, two persons were involved and in the second four. All survived, although some of the exposures exceeded what radiologists would normally consider a lethal dose. No one was rash enough to say that major accidents in atomic plants, involving the public beyond these plants, could be avoided. The experts, however, explained that a reactor would not explode like a bomb. The materials would melt and might escape into the atmosphere and the surrounding countryside. This naturally raises questions of attendant risks of placing atomic power generating-stations near big towns, but the conviction was expressed that a steel shell could confine the radioactive consequences of power plant accidents.

The Atom in Medicine

The positive benefits of development of atomic energy to medical research and clinical treatment as well as to biological science in general is to be found in the isotopes. Dr. Willard F. Libby, the U.S. Atomic Energy Commissioner, said that even if power had itself proved impossible of attainment, the atom would have paid its way (and had already done so) in terms of the uses of radioactive isotopes.

"I should not be surprised," he said, "if isotopes lead the atomic work for many years, until the industrial power plants come into action." He suggested among other things that, given highly sensitive instrumentation, portable and cheap, capable of detecting weak and harmless radiation, doctors might be able to use radioactive pills for diagnostic purposes.

Dr. Paul C. Aebersold, Director of the Isotopes Division of U.S.A.E.C., said that the use of isotopes, particularly in industry, had already meant savings of $100,000,000, and he reckoned from the evidence produced at the Conference from other countries that the world savings must already be of the order of $1,000,000,000.

The Western scientists were obviously impressed by the extent of the use of radioactive isotopes in the U.S.S.R. There are over 160 points throughout the Soviet Union where cobalt 60 is being used as a routine in the treatment of malignant disease. Professor M. N. Fateyeva, a Russian scientist, gave an impressive account of the isotopic research going on in Russia into hypertension, cardiac disease and metabolic diseases.

Tracking Diseases

As the discussion of medical usage proceeded with evidence from many countries it became obvious that scientists the world over

can with such isotopes attack the enemies of all mankind—the diseases which destroy them. Leprosy, polio, malaria, pernicious anaemia—all came under review. The first line of attack is on the carriers of epidemic diseases, from the housefly, which can be "branded" with isotopes and tracked, to the viruses which can be labelled and studied in transmission. Dr. Dale W. Jenkins of the National Research Council, U.S.A., presented a survey from world sources of the vast variety of epidemiological studies which are now proceeding. He pointed out that the study of the dispersal and flight range of houseflies had been going on for fifty years, but now the flies can be made to pick up radioactive filth and thus be followed. The marked flies, released by the thousands, can in a high percentage of cases be recovered and had been tracked as far as thirty miles. They could thus study the detailed habits of the flies—an important factor in relation to outbreaks of dysentery and poliomyelitis. A very promising field of research is in the labelling of the organisms of disease. Dr. Jenkins cited eleven disease organisms which had been labelled with isotopes—including the influenza virus, the plague bacillus and the tuberculosis bacteria. With such labels they could follow the organism into the carriers. They could study the ticks, mites, fleas, lice and other hosts of diseases which are transmitted to man.

Radioactive Mosquitoes

Arctic flowers had been made radioactive so that mosquitoes swallowed the radioactive tracers with the nectar and from thereon were marked insects. By labelling insecticides they could find out how they could be most effectively disseminated and do the least harm to the predators which help, in nature, to keep the pests under control. One way of getting rid of disease-carrying insects was not to kill them but to sterilise them with radioactive isotopes so that they could not breed. By use of isotopes, Dr. Jenkins pointed out, airborne and waterborne diseases could be studied. He indicated that it would be possible to study the transmission of pollen which caused allergies.

Dr. J. Costa-Ribiero (Brazil) gave an account of work going on in his country, tracking mosquitoes. The larvae of the mosquitoes were bred in radioactive liquid and when they emerged they were tracked to a distance of 800 metres. Professor V. R. Khanolkar (India) gave an account of work on leprosy, which afflicts 2,000,000 people in India, and in the treatment of which the basic sulphone drugs had had good but inconstant results. The action of the drug was now being studied in human cases by tracer methods and the movement of the organism tracked. Dr. E. Lester-Smith (United Kingdom) reported on isotope work on pernicious anaemia—not only how the vitamin B_{12} is absorbed in a curative way, but how a radioactivised form of the vitamin

can be used as a research instrument to discover the nature of the disease process.

From many countries came reports on the use of radioactive iodine in the study and treatment of thyroid disease. Dr. C. H. Jaimet (Canada) described how hypo-, and hyper-, thyroidism can be measured by the amount of radioactive iodine in the saliva.

Looking into the Brain

The range of possibilities extended from the treatment of brain tumour (*glioblastoma multiforme*) by introducing boron and radiating it by neutrons which make the boron radioactive at the site of the tumour, to the medical use of radioactive colloid isotopes in liquid suspension which will remain in the cavities into which they are injected and can be used to treat malignant disease on the surface wall of the cavity, to study of formation of red blood cells in the marrow and the relationship to anaemia associated with cancer and to leukaemia, to the use of radioactive carbon in studying the mode of action of the new anti-tubercular drugs.

A paper by W. F. Neuman, University of Rochester (U.S.A.), showed how bone-seeking isotopes are explaining the composition and structure of the bone, but pointed out that when these isotopes become located in the skeleton, it is difficult to remove them without "complete demineralisation of the entire skeleton, a therapy fraught with danger and difficulty".

A major session on disposal of waste products from atomic power plants included reports of experience at Hanford (U.S.A.) and at Chalk River (Canada) in the disposal of liquid wastes into the ground; reports from Britain and the U.S.A. on the discharge of radioactive wastes into the sea; and a report on air and gas cleaning for nuclear energy processes, from the U.S.A.

International Co-operation

There was unanimous insistence on the need or international conventions, and codes of practice, to govern the industrial and public health aspects of the peaceful uses of atomic energy. The World Health Organisation suggested a possible programme of international co-operation and enquiry: (1) the training of public health personnel to meet the problems of the expansion of nuclear technology; (2) the dissemination of public health information on health problems related to radiations; (3) a world wide scientific study of the somatic effects of low-level radiation on humans; and (4) a world wide scientific study of the radiation-induced genetic effects in the human race.

BOOKS

DEMOGRAPHIC YEAR BOOK FOR 1954. (Statistical Office of the United Nations. 6th Issue. New York, 1955. Pp. 729. Price 45s.)

This annual publication is intended for "demographers, economists and public health workers" and its scope resembles that of our own Registrar General's Annual Review, comprising mainly civil tables and a very comprehensive medical table on the causes of death. Most geographical areas of the world are covered. This issue claims to present the most exhaustive tabulation ever yet published and specialises this year on the subject of "Natality", eight new tables having been added, making forty-four in all. Details are given of areas, population, births, deaths, marriages and movements of population in the various countries of Europe, Asia, Africa, the Americas and Oceana (New Zealand and Australia). There are also tables on still-births, fertility, reproduction rates and infant mortality as well as life tables presented in conventional form. Table 30 which deals with the causes of death gives the death rates per 100,000 population for 44 diseases listed in the International Classification of Causes of Death.

Preceding the tables there is an explanatory foreword and about ninety pages of technical notes explaining the tables and drawing attention to the limitations of many of the data. As might be expected, many countries lack a compulsory registration system, and in such cases statistics can only refer to certain regions. Egypt, for example, produces figures based on health bureau localities only; but adequate footnotes and various checks are included to guide the reader. This stupendous work should be a constant source of reference and interest. Many are the speculations which will arise when poring over the tables, and many will be the profitable lines of enquiry which must be stimulated.

A. J. DALZELL-WARD.

JOURNAL OF TROPICAL PEDIATRICS, Vol. 1, No. 1. June 1955. (Quarterly. Price 5s. per issue from Effingham House, Arundel St., London, W.C.2.)

A new medical journal is always an occasion of great moment. After eager examination with more than usual criticism, judgement is eventually passed. Does it answer an existing need? Is it going to have a long life? Does it look like playing an important role? The answer to these questions, and many more unposed, is strongly in the affirmative for the first number of the first journal on the subject.

Like some new invention which becomes incorporated in our daily lives, we wonder how we could ever have managed without it. This journal, attractively produced and containing papers of a very high standard, reflects the current change in our orientation of clinical medicine and particularly paediatrics. Like the recently introduced experiment in global paediatrics between Great Ormond Street and Uganda (*B.M.J.*, August 13th, 1955), this journal looks like breaching a long-existing gap and influencing us, in this country anyway, in our understanding of the vital social nature of paediatrics. It should also play a considerable part in influencing the methods and practice of teaching the increasingly large number of post-graduates who come here to this country from abroad. They are at present being taught current British paediatric practice, with little, if any, reference to its applicability to such places as India, Africa or China. Led by an article by Cecily Williams, who has worked so effectively in tropical paediatrics, there is a series of articles on a variety of topics related to nutrition. They open up a new field of thought which, by altering our perspectives, makes us see our own day-to-day work in an entirely new light.

This new journal deserves strong support and encouragement, for it promises to be stimulating and realistic.

D. MORRIS.

FOREMAN. No. 3. Spring 1955. (Published annually by Industrial Welfare Society, 48 Bryanston Square, W.1. Pp. 64. Price 2s.)

In an ideal world foremen would not be necessary. If every manager did his own job properly it would not be necessary to create at the lowest management level a stratum of scapegoats charged with remedying management's omissions. As it is, the executive ulcer and anxiety neurosis are far more common among foremen than they are among executives; the foreman has little say in what should be planned, but he has to make the plan work—face to

face with its human component in daily contact. In exchange for this he is called a member of management, and sent on courses to widen his knowledge and stiffen his morale.

The Industrial Welfare Society, which exists to mitigate the necessary (and some of the unnecessary) evils of industrial life, is no doubt attacking the fundamental causes of the disease called "foremanship"; but meanwhile, in this bright and competently edited annual, it sets out to help the supervisor soldier along. There is information on promotion schemes, industrial psychology, motivation at work, training, welfare, labour relations, discipline, and so on. What a lot the foreman has to know! And how fortunate that the editor of *Foreman* has decided to interlard the knowledge with some first-rate humorous articles! The only inexplicable contribution is one entitled "My Heart Stood Still . . ." which is an account of how it feels to suffer a thrombosis. Perhaps it is explicable, though . . . isn't a thrombosis a clot which holds up the circulation? And is this perhaps a veiled admission that most of the foreman's problems would be solved by a little more application to tray-work at higher management levels?

TOM FASSAM.

SMOKING AND CANCER, by Alton Ochsner. (Frederick Muller, Ltd. 1955. Pp. 90. Price 6s.)

When Sir Walter Raleigh lit his pipe some time in 1585, and a well-meaning servant tried to put it out by pouring a bucket of water over his master's head, he little realised that he was starting a fire which would help to destroy millions of people in future years.

It is unlikely that there are many people who do not agree that tobacco smoking is a factor in the aetiology of lung cancer, and there are few of those who have studied the subject who do not believe that it is a major factor.

Dr. Alton Ochsner in his book sets out to prove these facts by quoting the opinions and statistics of many workers in this field. He quotes Doll and Bradford Hill in England, who examined the case histories of 1,488 patients suffering from cancer of the lung, and compared them with 1,278 cases of cancer in other parts of the body, and with 1,465 cases of disease other than cancer. Among 1,357 men with lung cancer only 7 were found to be *non-smokers*=0.5%. Among an equal number of men suffering from other disease 4.5% were non-smokers. In America, Hammond and Horn studied the smoking habits of 187,766 men and of 4,854 who died of cancer of the lung. It has been deduced from all this research that *a heavy smoker has 50 times more chance of contracting lung cancer than a non-smoker*. A heavy smoker is defined as a person who regularly smokes 16-20 cigarettes a day. Similar investigations have been carried out in France and other countries, all of which confirm the harm done by cigarette smoking.

The author quotes from the experimental work done on mice, which proves that cigarette smoke contains certain carcinogens, but the results of keeping mice in an atmosphere containing cigarette smoke are not so convincing. He states that "cancer of the larynx has increased approximately as rapidly as lung cancer in the past twenty years". This is an astounding statement, for the mortality in England and Wales due to this condition has not risen at all. He seems to suggest that better treatment has counteracted this rise in incidence of the disease.

Dr. Ochsner's book is full of interesting statements, for example, on the effect of smoking among pregnant women, and he says "the first thing a modern child must learn on its mother's lap is to watch out for the hot cigarette ash from her burning fag". He also observes the role of smoking in the aetiology of cardiovascular disease, but his evidence in these conditions is not perhaps so convincing as in cancer of the lung.

The book is written in a downright readable style, and will be understood by the intelligent public, although even these people might be helped by a more detailed explanation of some of the charts. The large amount of information contained in it will not be read by the mass of the population. To reach them, a much shorter pamphlet is needed. There is little doubt that a campaign against smoking, particularly amongst young people—men over 70 will always take the risk—should be undertaken, and would do much good. Such a campaign would require a considerable amount of money to be successful.

MALCOLM DONALDSON.

JUNIOR MOTHERCRAFT MANUAL. (Educational Productions Ltd. for British Red Cross Society. Pp. 64. Price 2s. 6d.)

This manual, produced in pictorial form, is certainly very attractive and will undoubtedly help to make the study of

Today he's in safer hands . . .

Every mother knows the danger of dirty feeding bottles and teats. But when she has Milton to keep them safe, she need worry no longer. So much simpler than boiling up water after every feed. And less danger of the bottle breaking. With Milton the bottle and teat are protected from dust, germs and flies — from one feed to the next. That's why nurses and midwives recommend it, and why, in **most** hospitals today, they rely entirely on

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mothercraft more interesting and real to the children for whom it is intended. It is written clearly and simply, with well chosen illustrations to emphasise practical implications.

The chapter on nutrition is good, and especially clear is the list of weaning foods and illustrations. Perhaps proteins, fats and carbohydrates might more usefully have been referred to as body-builders, heat and energy foods.

My main criticism is of Baby's Routine —opposite three charming pictures of a young mother we read : " The times of feeding should be regular and the infant awakened if asleep ". Surely this teaching is not customary to-day.

Nevertheless, I can strongly recommend this little handbook and congratulate the British Red Cross on its very attractive production.

D. K. Newington.

Objectives of the Physical Education Lesson, by M. W. Randall and W. K. Waine. (G. Bell & Sons Ltd., 1955. Pp. 181. Price 10s. 6d.)

In recent years the interest of many people has been aroused in the physical education lesson, and although there has been a great deal of discussion between teachers who follow the idea of movement training originated by Rudolph Laban and those who approach their work through other methods, very little has been written about this controversial subject.

M. W. Randall and W. K. Waine have rightly judged that the time is right to consider the major influences since the war in a proper perspective and in relation to what has been done before. This was an ambitious undertaking. The product represents the careful digestion of a lot of material including educational and physiological theory—this the authors have attempted to relate to the practice of physical education.

There is no doubt that this book will serve as a useful reference work to the physical education teacher and to those whose interest in the subject is more general. It should encourage anyone who has specialised at all in the study of physical education to read more about the subject. He will find here a good deal to help him on his way. The use of the Wetzel Grid for assessing physical development is explained clearly. The circuit training experiment in Leeds University as well as the principle of overload and the value of weight training are discussed. The authors' views are freely expressed on vigorous exercise, the acquisition of skills, enjoyment and satisfaction, the balanced development of physique, provision of scope for self-expression and for the development of social and sporting attitudes. These, they consider, are the five major objectives of the physical education lesson.

Jean Coward.

Sexual Offenders, by Norwood East, with extracts from other writers. (Delisle Ltd. 1955. Pp. 101. Price 10s. 6d.)

This is a little pocket book crammed with good stuff, but unfortunately lacking an index. The causal factors of sexual crime, its treatment, and recommendations, are clearly set out, with appendices of statistical findings. While the book is enlarged by the excellent bibliographies after each chapter, it is of course impossible in so short a space to give more than an outline of the problems of this barbaric section of forensic law.

A reader is rather disappointed in the conclusions and appendix. Why do psychological writers so often think the brain can comprehend sentences of over 50 words?

Desmond Curran, in his postscript, brings out well the serious damage that charges such as " exhibitionism " can do to the accused and to those who live in fear of offence.

This is a book which should be compulsorily digested by every Judge and J.P.

Ambrose Appelbe.

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Tavistock House, Tavistock Square, London, W.C.1
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Printed in Great Britain by Fisher, Knight & Co., Ltd., St. Albans.